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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/622,513

07/21/2003

Kenichi Fujita

030812

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23850 7590 08/02/2007  
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EXAMINER

RONESI, VICKEY M

ART UNIT

PAPER NUMBER

1714

MAIL DATE

DELIVERY MODE

08/02/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/622,513

Applicant(s)

FUJITA ET AL.

Examiner

Vickey Ronesi

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 27 June 2007.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 12 and 15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 12 and 15 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date <u>6/27/07</u> . | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Continued Examination Under 37 CFR 1.114*

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 6/27/2007 has been entered.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior office action.
3. All outstanding rejections are withdrawn in light of applicant's amendment filed on 6/27/2007.

### *Claim Rejections - 35 USC § 103*

4. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher (US 2002/0086926) in view of *Hawley's (Hawley's Condensed Chemical Dictionary, 13<sup>th</sup> Edition)*, Hall (EP 0 459 704), Ali (US 6,194,507), and Takeda et al (US 6,319,613).

Fisher discloses an IR absorbing polyvinyl butyral composition comprising lanthanum hexaboride particles having a particle size less than 200 nm, preferably ranging from 5 to 200 nm (paragraph 0019), in an amount ranging from about 0.005 to about 0.1 wt % based on the entire composition (paragraph 0015) that is used as an interlayer in glass laminates (paragraph 0012).

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Fisher fails to disclose (a) a master batch containing 0.1-10 parts by weight based on 100 parts by weight thermoplastic resin, (b) a thermoplastic resin such as polycarbonate, (c) the composition in the form of pellets, (d) a surface treating the hexaboride, and (e) hexaboride compounds other than lanthanum hexaboride.

With respect to the amounts of hexaboride (a), while Fisher only discloses amounts of hexaboride of up to 0.1 wt %, it is considered that it would have been obvious to one of ordinary skill in the art to utilize a masterbatch which would necessarily contain a higher concentration of the hexaboride, including amounts like presently claimed, in order to improve the dispersion of the hexaboride in the final composition. Evidence to support the examiner's position is found in *Hawley's* which discloses that a previously prepared mixture composed of a base material and a high percentage of an ingredient that is critical to the product being manufactured is a masterbatch which permits uniform dispersion of very small amounts (less than 1% like the hexaboride in Fisher's composition) (pages 703-704).

With respect to the thermoplastic resin (b), Fisher does not disclose polycarbonate; however, Fisher discloses that other polymers which are used to form interlayer sheets of glass laminated could be substituted for the preferred PVB (paragraph 0021).

Hall discloses an impact-resistant windshield for pressurized aircraft and teaches that polycarbonate energy-absorbing glass laminate interlayers provide improved impact properties at elevated temperatures than conventional energy-absorbing glass laminate interlayers such as polyvinylbutyral and polyurethane which only provide satisfactory performance at low and normal ambient temperatures (col. 1, lines 25-44). Given that Fisher is open to thermoplastic resins other than PVB and given that Hall teaches the benefit of polycarbonate interlayer in glass

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laminates, it would have been obvious to one of ordinary skill in the art to substitute the PVB of Fisher with polycarbonate resin.

With respect to the mater-batch being in the form of pellets (c), Ali discloses concentrates in thermoplastics such as polycarbonate (col. 2, line 46) and teaches that it is recognized by one of ordinary skill in the art that for most molding and/or shaping processes, pellets of a concentrate are most advantageous for accommodating most molding and/or shaping apparatuses (col. 4, lines 16-24). Given that it is well within the capabilities of one of ordinary skill in the art to utilize a master batch in the form of pellets as taught by Ali, it would have been obvious to one of ordinary skill in the art to utilize a master batch of Fisher in the form of pellets.

With respect to surface treating the hexaboride (d), while Fisher does not disclose that its hexaboride is surface-treated with a silane, titanium, or zirconium compound as presently claimed; however, note that it is open to other suitable additives (paragraph 0025). Takeda et al discloses a composition comprising a binder such as a thermoplastic resin (col. 4, lines 36-44; col. 5, lines 39-41) and hexaboride particles (abstract) which are used with a surface active agent such as a silicone (i.e., silane) coupling agent (col. 6, line 44) to improve stability of the hexaboride particles (col. 5, lines 43-45) and to be able to control surface resistivity (col. 5, lines 53-56). It is noted that the "silicone coupling agent" of Takeda et al is necessarily a silane coupling agent since a silicone by itself does not have a reactive functional group.

Given the teachings by Takeda et al regarding the benefits of surface-treating hexaboride particles in polymer compositions, it would have been obvious to one of ordinary skill in the art to utilize a silane coupling agent to improve the dispersion and control surface resistivity of the hexaboride particles in Fisher.

With respect to the use of IR absorbing materials other than lanthanum hexaboride (e), Fisher discloses the use of lanthanum hexaboride as an IR absorbing material, however, it does not disclose the use of other lanthanide hexaborides and calcium hexaboride as presently claimed. Takeda et al discloses a sunlight-shielding coating solution that utilizes fine hexaboride particles to impart sunlight-shielding properties which include compounds  $XB_6$  where  $X = La, Ce, Nd, Gd, Tb, Dy, Ho, Sm, Eu, Er, Tm, Yb, Lu, Sr, \text{ or } Ca$  (abstract).

In view of Takeda et al's recognition that lanthanum hexaboride and other lanthanide hexaborides and calcium hexaboride are equivalent and interchangeable, it would have been obvious to one of ordinary skill in the art to substitute lanthanide hexaboride with any of the hexaborides disclosed by Takeda et al and thereby arrive at the presently cited claims. Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by analogous prior art) is not an act of invention; where equivalency is known to the prior art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

5. Claims 12 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fisher (US 2002/0086926) in view of *Hawley's* (*Hawley's Condensed Chemical Dictionary*, 13<sup>th</sup> Edition), Hall (EP 0 459 704), Ali (US 6,194,507), and Takeda et al (US 6,319,613) and further in view of Wypych (*Handbook of Fillers*).

The discussion with respect to Fisher, *Hawley's*, Hall, Ali, and Takeda et al in paragraph 4 above is incorporated here by reference.

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Takeda et al teaches the use of silicone (i.e., silane) coupling agents, however, it does not teach the use of other types of surface treating agents.

Wypych also teaches the equivalency of using silicon, titanium, and zirconium compounds in surface-treating agents (page 320).

Therefore, given the teachings by Wypych regarding the benefits of surface-treating a hydrophilic filler with any one of silane, titanium, or zirconium compounds in polymeric compositions, it would have been obvious to one of ordinary skill in the art to utilize a titanium or zirconium compound as the surface treating agent of Takeda et al. Case law holds that the mere substitution of an equivalent (something equal in value or meaning, as taught by analogous prior art) is not an act of invention; where equivalency is known to the prior art, the substitution of one equivalent for another is not patentable. See *In re Ruff* 118 USPQ 343 (CCPA 1958).

### ***Response to Arguments***

6. Applicant's arguments filed 6/27/2007 have been fully considered but they are not persuasive. Specifically, applicant argues (A) that it is not possible to pelletize polyvinyl butyral as taught by Fisher because its glass transition temperature is below room temperature and (B) that it is not obvious to utilize polycarbonate as the thermoplastic resin of Fisher because it does not specifically suggest polycarbonate.

With respect to argument (A), given that it is obvious to substitute polycarbonate (which has a glass transition temperature well above room temperature and can be easily palletized) as taught by Hall above, it is the examiner's position that it is not relevant that polyvinyl butyral cannot be pelletized.

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With respect to argument (B), while Fisher does not teach polycarbonate, Hall has been relied upon by to teach polycarbonate given that Fisher is open to thermoplastic resins other than PVB and further given that Hall teaches the benefit of polycarbonate interlayer in glass laminates, it would have been obvious to one of ordinary skill in the art to substitute the PVB of Fisher with polycarbonate resin.

### *Conclusion*

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Vickey Ronesi whose telephone number is (571) 272-2701. The examiner can normally be reached on Monday - Friday, 8:30 a.m. - 5:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on (571) 272-1119. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

7/30/2007

Vickey Ronesi





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